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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,584	08/24/2001	David Mottier	213280US2	3621

7590 02/09/2005

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EXAMINER

SING, SIMON P

ART UNIT	PAPER NUMBER
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2645

DATE MAILED: 02/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/935,584

Applicant(s)

MOTTIER, DAVID

Examiner

Simon Sing

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 8 is/are rejected.
- 7) ☒ Claim(s) 2-7 and 9-24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20050202</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Drawings

1. The drawings are objected to because of the following:
 - 1.1 Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
 - 1.2 Figures 1-9 should have labels corresponding to each functional block. For example, in figure 2, block 200 should be labeled as "Adapted Filter", and block 210 should be labeled as "Detector", and so on according to the Specification.
2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The Specification is objected to because it fails to comply with 37 CFR 1.77(b).

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer

program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or

REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(e) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(f) BRIEF SUMMARY OF THE INVENTION.

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(h) DETAILED DESCRIPTION OF THE INVENTION.

(i) CLAIM OR CLAIMS (commencing on a separate sheet).

(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

4. The Specification is objected to because it fails to disclose the functionalities of functional blocks 430, 450 and 530 in figures 4 and 5.

Appropriate correction is required.

Claim Objections

5. Claims 14, 15 and 18-21 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only (i.e. A or B, **not** A and B). See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

6. Claims 6, 7, 12-17 and 22-24 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other

multiple dependent claims. See MPEP § 608.01(n). Accordingly, the claims 6, 7, 12-17 and 22-24 are not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 1-24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites: "combining said filtered signals by means of a first plurality of coefficients". It is confusing that how signals can be combined by a coefficient. As described in the Specification, page 8, line 5, said signals are weighted by the coefficients and then combined by a summer, or combiner. There is no disclosure of coefficients means for combining said signals. Claims 2 and 8 have the same deficiency by reciting: "signals then being linearly combined by means of the (second) set (of coefficients)". Claims 2-24 are rejected for being dependents of claim 1.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 1 recites the limitation "the different antennae" in line 12. There is insufficient antecedent basis for this limitation in the claim. Claims 2-24 are rejected for being dependents of claim 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yoshida US 6,282,233 in view of Monogioudis et al. US 5,550,810.

9.1 Regarding claim 1, Yoshida discloses a multi-user CDMA communication system in figure 1 with interference eliminating units 2-1-1 to 2-1-n (column 7, lines 28-38).

Yoshida teaches:

a) a reception step for despreading (decomposing) each antenna signal into multiple signals (column 7, lines 63-67; column 8, line 1), issuing from different paths 1-k (figure 2), weighting the signals by a first plurality of coefficients (one for each path) from a channel estimating means 20 and a complex conjugate means 21 (figure 2;

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column 8, lines 5-11), and combining the weighted signals by a summer 14 (figure 2, column 8, line 12-14);

b) a step of estimating the contribution of signals received by each antenna by weighting the signal from the output of summer 14 with a second plurality of coefficients from channel estimate means 20 at means 16 (figure 2; column 8, lines 22-25);

c) a step of eliminating interference by subtracting from the antenna signals the estimated contribution (figure 1, step 4-1) in order to obtain cleaned antenna signals; and

d) repeat the steps a-c at a second stage 1-2 (figure 1).

Yoshida fails to teach that the despreading signals are being filtered.

However, Monogioudis discloses a CDMA system in figure 3. Monogioudis teaches that with multiple inputs, received signals are despreaded in a bank of matched filters (Abstract; column 5, lines 27-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Yoshida's reference with the teaching of Monogioudis, so that the despreading step would have comprised filters, because filters were commonly placed at an antenna's input to filter out unwanted signals.

9.2 Regarding claim 8, Yoshida teaches that the first plurality of coefficients are conjugate (complex) coefficients.

Allowable Subject Matter

10. Claim 2 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first paragraph, set forth in this Office action, and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The current invention discloses that the first plurality of coefficients comprises a first set of complex coefficients adapted to minimized a first plurality of error signals, and a second set of complex coefficients adapted to minimized a second error signal.

Yoshida teaches a plurality of conjugate (complex) coefficients, but fails to teach the plurality of conjugate coefficient comprises two sets of coefficients to minimize two error signals.

11. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The current invention discloses that the second plurality of coefficients comprises a first set of complex coefficients and a second set of complex coefficients, wherein the second set is obtained from a an estimation of s sub-vector.

Yoshida teaches a plurality of conjugate (complex) coefficients, but fails to teach the plurality of conjugate coefficient comprises two sets of coefficients obtained from a sub-vector.

12. Claims 3-5 would be allowable for being dependents of claim 2.
13. Claims 10 and 11 would be allowable if rewritten to depend on claim 9.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

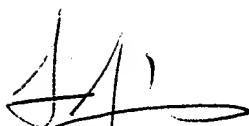
- a). US 6,115,406 (MESECHER) discloses a CDMA communication system with antenna array.
- b). US 6,115,409 (UPADHYAY et al.) discloses a system for controlling interference in spread spectrum CDMA receivers.
- c). US 6,192,067 (TODA et al.) discloses a multi-stage interference canceller.

15. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Simon Sing whose telephone number is (703) 305-3221. The examiner can normally be reached on Monday - Friday from 8:30 AM to 5:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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supervisor, Fan Tsang, can be reached at (703) 305-4895. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.



S.Sing.

02/03/2005

Handwritten notes:

ROUND 6. FOSTER
PRIMARY PATENT EXAMINER

2/5/05